Claims

1. A self-crosslinking high molecular weight polyurethane dispersion based on oxidatively drying diols and/or triols, characterized in that the reaction components comprise

   (A) from >12 to 30% by weight of an unsaturated fatty acid component which is capable of oxidative drying and comprises at least one unsaturated fatty acid derivative or fatty acid epoxy ester having two or three reactive hydroxyl groups,

   (B) from 2 to 11% by weight of a polyol component comprising

      (i) from 0 to 1.5% by weight of at least one low molecular weight polyol having two or more reactive hydroxyl groups and a molecular mass of from 60 to 150 dalton,

      (ii) from 0.8 to 6% by weight of at least one higher molecular weight polyol having two or more reactive hydroxyl groups and a molecular mass of from 500 to 4000 dalton,

      (iii) from 1.2 to 3.5% by weight of at least one anionically modified polyol having two or more reactive hydroxyl groups and one or more carboxyl groups which are inert toward polyisocyanates,

   (C) from 8 to 25% by weight of a polyisocyanate component comprising at least one polyisocyanate or polyisocyanate derivative having two or more aliphatic or aromatic isocyanate groups,

   (D) from 0 to 10% by weight of a solvent component comprising at least one solvent which is inert toward polyisocyanates and is completely or partially miscible with water,

(E) from 0.5 to 3% by weight of a neutralization component comprising at least one base based on an amine or hydroxide,

(F) from 0 to 0.5% by weight of a siccative component comprising at least one water-emulsifiable active or auxiliary dryer,

(G) from 0.5 to 3% by weight of a chain extension component comprising at least one polyamine having two or more reactive amino groups,

and also water as balance.

2. The polyurethane dispersion as claimed in claim 1, characterized in that the component (A) has an iodine number in the range from 100 to 150 g $I_2 \cdot (100g)^{-1}$, a hydroxyl number of from 120 to 150 mg $KOH \cdot g^{-1}$ and an acid number of from 1 to 5 mg $KOH \cdot g^{-1}$.

3. The polyurethane dispersion as claimed in either of claims 1 and 2, characterized in that the component (A) has a viscosity of from 2500 to 25 000 mPa·s (20°C).

4. The polyurethane dispersion as claimed in any of claims 1 to 3, characterized in that the component (A) comprises a reaction product of unsaturated fatty acids and aliphatic or aromatic epoxy resins or polyepoxides having two or three epoxide groups which are reactive toward fatty acid.

5. The polyurethane dispersion as claimed in any of claims 1 to 4, characterized in that the component (A) comprises a reaction product of at most triply unsaturated fatty acids having an iodine number of from 170 to 190 g $I_2 \cdot (100g)^{-1}$ and aliphatic or aromatic epoxy resins or polyepoxides having an epoxide number of >0.5 $eq \cdot (100g)^{-1}$.

6. The polyurethane dispersion as claimed in any of claims 1 to 5, characterized in that the component (B) (i) comprises at least one low molecular weight polyol having a molecular mass of from 90 to 140 dalton.

7. The polyurethane dispersion as claimed in any of claims 1 to 6, characterized in that the component (B) (ii) comprises a polymeric polyol selected from the group consisting of polyalkylene glycols, aliphatic or aromatic polyester polyols, polycaprolactone polyols and polycarbonate polyols and combinations thereof.

8. The polyurethane dispersion as claimed in claim 7, characterized in that the component (B) (ii) comprises linear or bifunctional polypropylene glycols.

9. The polyurethane dispersion as claimed in any of claims 1 to 8, characterized in that the component (B) (ii) comprises at least one higher molecular weight polyol having a molecular mass of from 1000 to 2000 dalton.

10. The polyurethane dispersion as claimed in any of claims 1 to 9, characterized in that the component (B) (iii) comprises at least one bishydroxyalkane-carboxylic acid.

11. The polyurethane dispersion as claimed in claim 10, characterized in that the bishydroxyalkane-carboxylic acid is dimethylolpropionic acid.

12. The polyurethane dispersion as claimed in any of claims 1 to 11, characterized in that the component (B) (iii) comprises at least one anionically modified polyol having a molecular mass of from 100 to 200 dalton.

13. The polyurethane dispersion as claimed in any of claims 1 to 12, characterized in that the neutralization component (E) comprises ammonia and/or tertiary amines.

14. The polyurethane dispersion as claimed in any of claims 1 to 12, characterized in that the neutralization component (E) comprises an alkali metal hydroxide.

15. The polyurethane dispersion as claimed in any of claims 1 to 14, characterized in that the neutralization component (E) is present in such an amount that the degree of neutralization based on the free carboxyl groups is from 80 to 100 equivalent-%, preferably from 90 to 100 equivalent-%.

16. The polyurethane dispersion as claimed in any of claims 1 to 15, characterized in that the siccative component (E) comprises metal soaps and/or metal salts.

17. The polyurethane dispersion as claimed in any of claims 1 to 16, characterized in that the chain extension component (G) is present in such an amount that the degree of chain extension is from 50 to 100 equivalent-%, preferably from 70 to 100 equivalent-%, based on the free isocyanate groups of the prepolymer.

18. The polyurethane dispersion as claimed in any of claims 1 to 17, characterized in that the component (A) is present in an amount of from >12 to 20% by weight, the component (B) (i) is present in an amount of from 0.4 to 1% by weight, the component (B) (ii) is present in an amount of from 1.6 to 5% by weight, the component (B) (iii) is present in an amount of from 1.6 to 3% by weight, the component

(C) is present in an amount of from 12 to 20% by weight, the component (D) is present in an amount of from 7 to 9% by weight, the component (E) is present in an amount of from 1 to 2% by weight, the component (F) is present in an amount of from 0.1 to 0.5% by weight, the component (G) is present in an amount of from 1 to 2% by weight and the balance is water.

19. The polyurethane dispersion as claimed in any of claims 1 to 18, characterized in that the NCO/OH equivalent ratio of the components (A), (B) and (C) is in the range from 1.2 to 2.0, preferably in the range from 1.4 to 1.8.

20. The polyurethane dispersion as claimed in any of claims 1 to 19, characterized in that the solids content is from 30 to 60% by weight, preferably from 35 to 55% by weight.

21. The polyurethane dispersion as claimed in any of claims 1 to 20, characterized in that the polyurethane resin has a molecular mass of from 50 000 to 100 000 dalton.

22. A process for preparing the polyurethane dispersion as claimed in any of claims 1 to 21, characterized in that

a) the components (A) to (C) are reacted, if appropriate in the solvent component (D) and if appropriate in the presence of a catalyst, to form a polyurethane prepolymer,

b) the prepolymer from stage a) is subsequently allowed to react with the neutralization component (E) and, if appropriate, the siccative component (F) and

c) the prepolymer from stage b) is finally dispersed in water and the high molecular weight polyurethane dispersion is built up by

reaction with the chain extension component (G).

23. The process as claimed in claim 22, characterized in that the reaction stage a) is carried out at from 60°C to 120°C, preferably from 80°C to 100°C.

24. The process as claimed in either of claims 22 and 23, characterized in that the reaction stage (a) is carried out in the presence of from 0.01 to 1% by weight, based on the components (A) to (D), of a catalyst customary for polyaddition reactions on polyisocyanates.

25. The use of the polyurethane dispersion as claimed in any of claims 1 to 21 as binder for one-component paints or varnishes or coatings for the surfaces of mineral building materials such as concrete, wood and wood materials, paper, metal and plastics and for one-component adhesives or sealants in the building sector.